CONSTRUCTION SPECIAL SPECIFICATION

SECTION 16410_S

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

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PART 1 -GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Feeder and equipment disconnects.

2. Enclosed circuit breakers.

1.02 SUBMITTALS

A. General: Submit the following according to the requirements of Section 01330.

B. Product data for switches, circuit breakers, and accessories specified in this Section. Vendor shall include originals of the manufacturer's catalog data that relates to the specified equipment.

C. Descriptive data and time-current curves for protective devices and let-through current curves for those devices with current-limiting characteristics. Include coordination charts and tables, and related data.

1.03 QUALITY ASSURANCE

A. Comply with NFPA 70 "National Electrical Code" for components and installation.

B. Listing and Labeling: Provide products specified in this Section that are listed and labeled.

1. The Terms "Listed" and "Labeled": As defined in the "National Electrical Code," Article 100.

2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

A. Single-Source Responsibility: All enclosed switches and circuit breakers shall be the product of a single manufacturer.

B. Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.

PART 2 -PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide enclosed switches and circuit breakers by one of the following:

1. Fusible Switches:

a. General Electric Company.

b. Siemens

c. Square D

2. Molded-Case Circuit Breakers:

a. General Electric Company.

b. Siemens

c. Square D

2.02 ENCLOSED SWITCHES

A. Enclosed Non-fusible Switch: NEMA KS 1, Type HD, handle lockable with 2 padlocks.

B. Enclosed Fusible Switch, 800 Amperes and Smaller: NEMA KS 1, Type HD, clips to accommodate specified fuses, enclosure consistent with environment where located, handle lockable with 2 padlocks, and interlocked with cover in CLOSED position.

C. Enclosure: NEMA KS 1, Type 1, unless specified or required otherwise to meet environmental conditions of installed location.

1. Outdoor Locations: Type NEMA 3R.

2. Kitchen Areas: Type NEMA 4X, stainless steel.

3. Other Wet or Damp Indoor Locations: Type NEMA 4.

2.03 ENCLOSED CIRCUIT BREAKERS

A. Enclosed Molded-Case Circuit Breaker: NEMA AB 1, handle lockable with 2 padlocks.

B. Characteristics: Inverse time-current characteristic for overload and instantaneous magnetic trip element for short circuit. Adjustable magnetic trip settings for circuit breaker frame sizes over 250A. Frame size, trip rating, number of poles, and auxiliary devices as indicated; interrupting capacity rating to meet available fault current, 10,000 symmetrical rms amperes minimum; with

appropriate application listing when used for switching fluorescent lighting loads or heating, air conditioning, and refrigeration equipment.

C. Molded-Case Switch: Where indicated, molded-case circuit breaker without trip units.

D. Lugs: Mechanical lugs and power-distribution connectors for number, size, and material of conductors indicated.

E. Shunt Trip: Where indicated, 120 volts, 60 Hz.

F. Ground Fault Protection: Integrally or Remote-mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground fault indicator.

G. Accessories: As indicated.

H. Enclosure: NEMA AB 1, Type 1, unless specified or required otherwise to meet environmental conditions of installed location.

1. Outdoor Locations: Type NEMA 3R.

2. Kitchen Areas: Type NEMA 4X, stainless steel.

3. Other Wet or Damp Indoor Locations: Type NEMA 4.

I. Single Phase Motor Disconnects: Horsepower rated toggle switch type. Provide thermal overloads in switch where serving loads other than motors with integral thermal overloads.

PART 3 -EXECUTION

3.01 INSTALLATION

A. Install enclosed switches and circuit breakers in locations as indicated, according to manufacturer's written instructions.

B. Install enclosed switches and circuit breakers level and plumb.

C. Install wiring between enclosed switches and circuit breakers and control/indication devices.

D. Connect enclosed switches and circuit breakers and components to wiring system and to ground as indicated and instructed by manufacturer. Tighten connectors and terminals, including screws and bolts according to equipment manufacturer's published torque tightening values for equipment connectors. Where manufacturer's torque requirements are not indicated, tighten connectors and terminals according to tightening torques specified in UL Standard 486A.

3.02 0.1 FIELD QUALITY CONTROL

A. Testing: After installing enclosed switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.

1. Procedures: Perform each visual and mechanical inspection and electrical test stated in NETA Standard ATS, Section 7.5 for enclosed switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.

B. Correct malfunctioning units at site, where possible, and retest to demonstrate compliance; otherwise, remove and replace with new units, and retest.

3.03 ADJUSTING

A. Set field-adjustable enclosed switches and circuit breaker trip ranges to conform to indicated ratings and settings. Make final system adjustments and settings as per the recommendations of the Engineered Coordination Study. Coordinate with Owners representative and the Project Engineer.

B. Test all circuit breakers rated 600 Amps or larger using the primary current injection method.

3.04 CLEANING

A. After completing system installation, including outlet fittings and devices, inspect exposed finish. Remove burrs, dirt, and construction debris and repair damaged finish including chips, scratches, and abrasions.

END OF SECTION 16410